REMARKS

Claim 1 stands rejected under 35 U.S.C. § 102 as being anticipated by Ito et al., and claims 1-10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Applicants' admitted prior art ("APA") alone or in combination with Ito et al.. These rejections are respectfully traversed for the following reasons.

Claim 1 recites in pertinent part, "forming a printed pattern on said layer; and firing the printed pattern positioned on said layer." In contrast, the alleged printed pattern 4 of Ito et al. is already positioned ***on the substrate 2*** when firing commences (*see* transition between Figure 2C and 2D), rather than on the alleged resin layer 3. That is, in Ito et al., the alleged pattern 4 permeates into the alleged resin layer 3 so as to be attached directly to the substrate 2, and surrounded by film 3 which acts as a quasi-screen, when the ***firing step commences*** (*see, e.g.*, col. 1, lines 31-37, col. 3, lines 1-39 and Figures 2A-2D).

As anticipation under 35 U.S.C. § 102 requires that each and every element of the claim be disclosed in a single prior art reference, *Akzo N.V. v. U.S. Int'l Trade Commission*, 808 F.2d 1471 (Fed. Cir. 1986), based on the forgoing, it is submitted that Ito et al. does not anticipate claim 1.

Indeed, it appears that Ito et al. discloses solvent amounts in the paste that are substantially larger than those in exemplary embodiments that can be utilized in the present invention. For example, claim 7 defines 8-25 wt.% in one exemplary embodiment of the present invention versus 60 wt.% in Ito et al. as disclosed at col. 2, lines 58-64. In fact, Ito et al. teaches away from using conventional screen printing (*see* col. 1, lines 10-31), whereas the present invention can use a thick-film technology where most of the elements are formed by a screen printing process.

According to the present invention, the printing pattern 16 can be positioned on the resin layer when the firing step commences (*see* transition between Figures 1C and 1D of Applicants' drawings). Accordingly, the present invention can help prevent the exfoliation problem described with respect to Figures 3A-3B of the admitted prior art, whereas Ito et al. is unrelated to such issues.

To further exemplify the distinction between the process/materials of the present invention and Ito et al., an exemplary embodiment is described. For example, in the present invention, a conductive paste includes fine particles (e.g., silver, palladium, etc.) which are ***dispersed in a resin solution***. Accordingly, when the paste is printed on a resin layer formed on a substrate, ***only a solvent is absorbed in the resin*** and the paste does not spread out of a printed pattern (*see, e.g.,* page 2, lines 16-17 of Applicants' specification). In contrast, in Ito et al., the material used is the so-called "gold resinate paste (or silver resinate)" which is an organic solution including gold (or silver) containing organic acid compound dissolved in a solvent (col. 2, line 61). Accordingly, as the paste is a solution, materials in the solution permeate into a resin layer (*see, e.g.,* claim 1, line 8 of Ito et al.) formed on a substrate such that if the resin layer is thick, it spreads and deforms the circuit pattern.

Regarding the rejection under 35 U.S.C. § 103, it is respectfully submitted that claim 1 is patentable for the same reasons discussed above with respect to the § 102 rejection. The Examiner is directed to MPEP § 2143.03 under the section entitled "All Claim Limitations Must Be Taught or Suggested", which sets forth the applicable standard:

> To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (citing *In re Royka*, 180 USPQ 580 (CCPA 1974)).

In the instant case, the pending rejection does not "establish *prima facie* obviousness of [the] claimed invention" as recited in claim 1 because the proposed combination fails the "all the claim limitations" standard required under § 103.

Moreover, it is respectfully submitted that the Examiner's allegation that choosing an optimal thickness would have been obvious through routine experimentation is improper. Obvious design through routine experimentation can be asserted only when a particular parameter is first recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation (*see* MPEP § 2144.05(II)(B), which cited *In re Antonie*, 195 USPQ 6 (CCPA 1977)).

In the instant case, the cited prior art is completely silent as to the importance of thickness in relation to exfoliation. As described for example on pages 1-4 of Applicants' specification, only Applicants have recognized the importance of film thickness to prevent exfoliation, and provided a process by which the needed thickness can be produced while also forming a good-quality layer (e.g., avoiding the bumpy surface resulting from using a fine mask; *see* page 3, lines 25-28 of Applicants' specification). Such parameters, as disclosed only by Applicants, include the molecular weight of the resin, surface roughness of the respective layers, temperature increasing rate, solvent content, etc., some of which are recited in the dependent claims. Because Ito et al. does not recognize the achieved result, and is in fact related to an entirely different printing process using the alleged resin film as the quasi-screen, it is respectfully submitted that the optimum or workable ranges of the film thickness (as well as the other referenced parameters) can not be characterized as routine experimentation pursuant to the cited MPEP section above.

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claim 1 is patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also patentable. In addition, it is respectfully submitted that the dependent claims are patentable based on their own merits by adding novel and non-obvious features to the combination.

Based on all the foregoing, it is submitted that claims 1-10 are patentable over the cited prior art. Accordingly, it is respectfully requested that the rejections under 35 U.S.C. § 102 and 103 be withdrawn.

CONCLUSION

Having fully and completely responded to the Office Action, Applicants submit that all of the claims are now in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below. To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,
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FIG. 2A
(Prior Art)

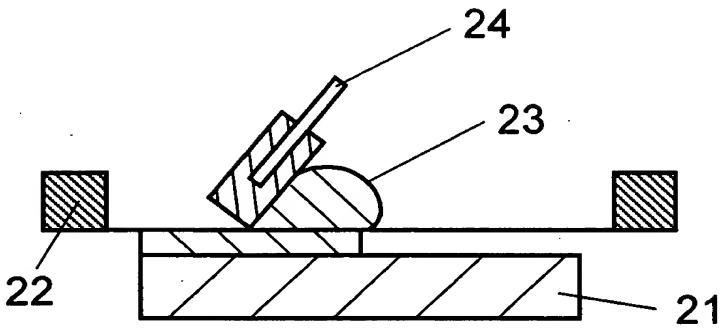

FIG. 2B
(Prior Art)

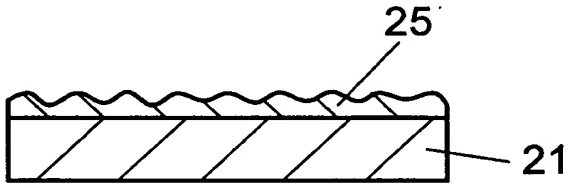

FIG. 2C
(Prior Art)

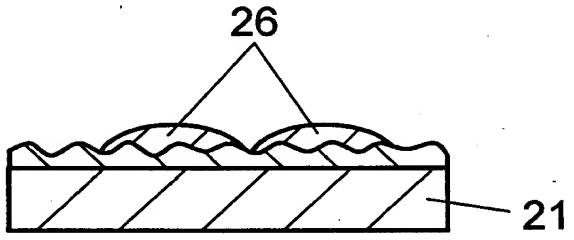

FIG. 2D
(Prior Art)

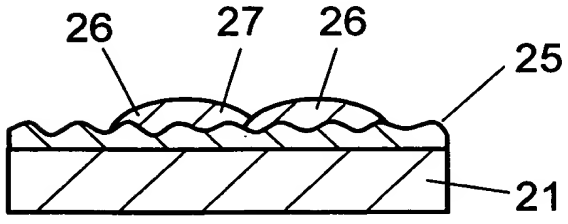

FIG. 3A
(Prior Art)

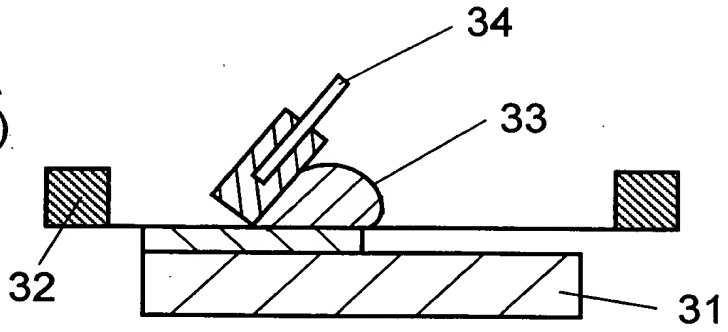

FIG. 3B
(Prior Art)

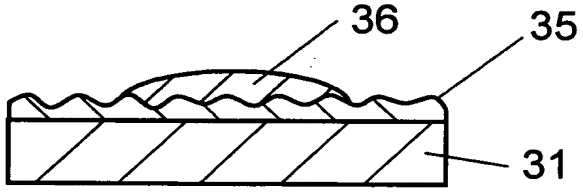

FIG. 3C
(Prior Art)

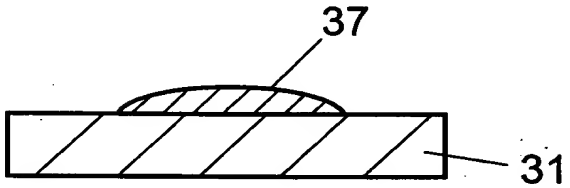

FIG. 3D
(Prior Art)